



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

July 1, 2019

Mr. John Simkins
Federal Highway Administration
400 North 8th Street, Suite 750
Richmond, VA 23240

Attn: Kevin Jones, Planning and Environment Team

Re: Route 718 Bridge Replacement,
Franklin County, VA, VDOT
Project #0718-033-334, PE101,
M501, B653, UPC 55471, Project
#2019-F-1019

Dear Mr. Simkins:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (Opinion) based on our review of the referenced project and its effects on the federally listed endangered Roanoke logperch (*Percina rex*) (RLP) in accordance with section 7 of the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). Your February 6, 2018 (intended to be 2019) request for formal consultation was received on February 7, 2019.

This Opinion is based on information provided in the January 8, 2019 section 7 project proposal for Route 718 Bridge Replacement over Pigg River, UPC 55471 (Virginia Department of Transportation [VDOT] 2019), telephone conversations, and other sources of information. The consultation history is located after the Literature Cited. A complete administrative record of this consultation is on file in this office.

We concur with the Federal Highway Administration's (FHWA) December 7, 2018 determination of may affect for the federally listed threatened northern long-eared bat (*Myotis septentrionalis*), but are relying on the findings of the January 5, 2016 Programmatic Biological Opinion for Final 4(d) Rule on the Northern Long-eared Bat and Activities Excepted from Take Prohibitions to fulfill their project specific responsibilities. The northern long-eared bat will not be considered further in this Opinion.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

As defined in the ESA section 7 regulations (50 CFR 402.02), “action” means “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies in the United States or upon the high seas.”

The FHWA is providing funding to VDOT for the action described below and associated permit applications have been submitted to the U.S. Army Corps of Engineers (Corps). The following is a summary of the proposed action and a detailed description can be found in the final section 7 project description (VDOT 2019).

VDOT is proposing the replacement of the existing bridge (Federal ID # 7926, VA Structure ID #6443) carrying Route 718 (Colonial Turnpike) over the Pigg River in Franklin County (Figure 1). The Project is located approximately 0.5 miles (mi) north of Route 715 and 0.9 mi south of Route 646. The replacement bridge will be constructed on the existing alignment and includes roadway approach and drainage improvements. This project is anticipated to take 2.5 years to complete.



Figure 1. Vicinity map.

Construction – Bridge replacement activities include tree removal and instream work to complete the pier upgrades. The proposed project will be accomplished in accordance with VDOT Road and Bridge Specifications (2016) and will adhere to Virginia Erosion and Sediment Controls (Virginia Department of Environmental Quality 1992) and stormwater management laws and regulations. The detailed plans for bridge replacement are in Appendix A. The project sequence and impacts will occur as follows:

- Site preparation will include staking out the limits of disturbance and performing clearing and grubbing of vegetation for installation of erosion and sediment control devices,

including but not limited to silt fence, check dams, inlet protection, construction entrances, and temporary seeding and mulching.

- Upland ground disturbing activities will include excavation to remove existing abutments, installation of construction staging areas and access, and the reconstruction of the Route 718 roadway approaches. The proposed 20 foot (ft) roadway approach will have 3 ft wide shoulders (1 ft paved) and 4 ft ditches. A guardrail will be installed as required. Total area of land disturbance is approximately 0.9 acres, including clearing of approximately 0.25 acres of trees for access, crane operations, additional equipment operation, staging areas, etc.
- Work bridge installation will span half the channel width using crib substructures on the downstream side of the bridge resulting in 144 square feet (ft²) of temporary fill (Appendix A Sheet 4). Cofferdams will be placed and pumped out around footprints of the proposed and existing Piers 1 and 2 (Appendix A Sheet 2).
- The existing bridge superstructure will be removed in entirety, followed by removal of 3 piers. Existing Pier 1 is located within ordinary high water limits (OHW) near the western river bank. Proposed Pier 1 will be reconstructed in approximately the same location as Existing Pier 1, but will require a larger footing to meet current design standards. Existing Pier 2 is located in the river channel and will be removed. Proposed Pier 2 will be reconstructed partially within OHW on the edge of the eastern riverbank. Existing Pier 3 is located entirely outside of OHW and will be removed without replacement.
- Class II riprap will be placed around Abutment A for scour protection and will permanently impact 649 ft² of river.
- The proposed 3 span continuous steel plate multi-girder bridge will have a 26 ft opening and provide 2 10-ft travel lanes including a 40-ft curb-to-curb concrete deck width to support 2 12-ft lanes with 8-ft shoulders.
- Proposed Drainage Channels 3-2, 3-3, and 3-5 will permanently impact a total of 186 ft² of river but will channel bridge deck water into riprap installed in the river bank instead of directly into river.

Temporary impacts below OHW will consist of work bridge placement and non-erodible cofferdams with temporary dewatering for pier removal and construction, and drainage construction. Permanent impacts of 1,015 ft² will occur for excavating and building new piers and drainage channels, and placing riprap. However, because Pier 2 is being removed from the center of the river channel and native river substrate will be used to fill excavated spaces around piers, resulting in a net reclamation of river bottom, the total permanent loss of habitat is 850.5 ft² (Table 1).

Table 1. Summary of impacts below OHW.

Impact	Net Permanent Fill / Loss of River Bottom Habitat (construction) (ft ²)	Temporary River Bottom Disturbance (cofferdams, excavation) (ft ²)
Piers	15.5	1,243
Work bridge	0	144
Abutment riprap	649	139
Drainage channels	836	0
Total	850.5	1,526

Conservation Measures –

- River bottom impacts will be minimized by performing all instream work from the river banks, or behind temporary, non-erodible cofferdams. The temporary cofferdams and work bridge will be placed and removed in such a manner as to cause minimal disturbance to the river bottom and will be placed and removed outside the RLP time-of-year restriction (TOYR) of March 15 to June 30 of any year. All instream work for pier removal and construction will be conducted in the dry within the cofferdam and may occur during the TOYR for RLP. Fish, including RLP, will be relocated by permitted individuals from each of the cofferdam areas in accordance with the Virginia Department of Game and Inland Fisheries (VDGIF) Fish Relocation Best Practices (2018).
- At least 50% of the river channel will remain unobstructed during construction.
- Native river substrate excavated during construction will be kept on site and used for backfill over pier footings to minimize instream habitat loss.
- Fuel storage will not be allowed within 50 linear ft (LF) of any water body. When possible, maintenance and refueling activities will take place at least 50 LF away from the Pigg River. If this is not practical (e.g., with large cranes or large excavators), changing fluids and refueling equipment may occur within 50 LF of the Pigg River. However, these activities will occur within an established secondary containment, and/or the receptacles on the equipment will be surrounded by oil absorbing pads that can absorb any spills that may occur.

ACTION AREA

The Action Area is defined at (50 CFR 402.02) as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” The Service has determined that the Action Area for this project within the Pigg River extends from 655 ft upstream of the bridge project footprint (approximately 120 LF) to 2,625 ft downstream of the bridge project footprint for a total river length of approximately 3,400 LF (0.6439 mi). The Action Area also includes 0.9 acres of upland disturbance, including 0.25 acres of tree-clearing for reconstruction of the Route 718 roadway approaches, equipment staging, and safe equipment operations (Figure 2).



Figure 2. Action Area.

STATUS OF THE SPECIES

Per ESA section 7 regulations (50 CFR 402.14(g)(2)), it is the Service’s responsibility to “evaluate the current status of the listed species or critical habitat.” The Service listed the RLP as endangered on August 18, 1989 (54 FR 34468). The following is a summary of RLP general life history drawn from the RLP recovery plan (Service 1992), the RLP 5-year status review (Service 2007), and peer-reviewed publications. For a more detailed account of the species description, life history, population dynamics, threats, and conservation needs, refer to: <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E01G>.

The RLP is a small darter found in 7 isolated populations in VA and NC. They use large, warm, clear streams with a substrate of sand, gravel, and boulders in a combination of riffles, runs, and pools for feeding, breeding, and sheltering. RLP are sight feeders and flip rocks to expose invertebrates (Rosenberger and Angermeier 2003).

To assess the current status of the species, it is helpful to understand the species' conservation needs which are generally described in terms of reproduction, numbers, and distribution (RND). The Service frequently characterizes RND for a given species via the conservation principles of resiliency (ability of species/populations to withstand stochastic events which is measured in metrics such as numbers, growth rates), redundancy (ability of a species to withstand catastrophic events which is measured in metrics such as number of populations and their distribution), and representation (variation/ability of a species to adapt to changing conditions which may include behavioral, morphological, genetics, or other variation) (collectively known as the three Rs).

To meet the goal of recovery of the RLP, protecting and enhancing habitat containing RLP populations, and expanding populations within river corridors that either now support this species or supported it historically are recommended (Service 1992). The primary actions to address these criteria include: (1) Maintain and increase the health and vigor of present populations through a watershed-level conservation approach that addresses sediment loading and preserves ecological processes that provide ephemeral, seasonal, and persistent types of habitat required over RLP ontogeny; (2) Evaluate the feasibility of propagating RLP and determine whether a controlled propagation and reintroduction/augmentation plan should be developed; (3) Increase connectivity of RLP populations by identifying major and minor artificial movement barriers and eliminating them when feasible; (4) Prevent and reduce the risk of catastrophic extirpation from toxic spills through identification, evaluation, and improvement of present and proposed road crossings, agricultural, and industrial facilities; (5) Survey streams with suitable habitat and continue to identify habitat that is potentially suitable for RLP reintroduction/augmentation; (6) Revise the recovery plan to include measurable criteria that specifically address each of the relevant listing factor and incorporate currently available information about population abundance and distribution (Service 2007).

The primary factors influencing RLP status include risks posed by large dams and reservoirs, small dams and barriers, watershed urbanization, agricultural and silvicultural activities, channelization, roads, toxic spills, riparian/woody debris loss, and water withdrawals (Service 2007). Climate change is a threat to RLP with storm events increasing in frequency and intensity, resulting in increased periods of higher water volume, flow rates, and turbidity that affect the RLP's abilities to forage, shelter, and reproduce. In summary, as a whole, the rangewide status of the species is improving, although the geographic range remains small (Service 2007). The populations in VA seem to be stable or increasing (Service 2007).

STATUS OF CRITICAL HABITAT

No critical habitat has been designated for this species.

ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the

Action Area. Also included in the environmental baseline are the anticipated and/or ongoing impacts of all proposed federal projects in the Action Area that have undergone Section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

Status of the Species within the Action Area

Presence/absence surveys for RLP were not conducted for the proposed action. RLP presence is assumed where suitable habitat was identified within potential habitat and in areas known to support RLP. The Anderson (2016) model identifies this stretch of the Pigg River as potential habitat and previous surveys of the area recorded 14 RLP observations between 2001 and 2013 within the Action Area (Virginia Fish and Wildlife Information Service 2019). The Pigg River RLP population is recovering in both size and extent from a 1975 chemical spill that killed most individuals in the river (Service 2007). Data from electrofishing counts and habitat assessments for RLP conducted along the Pigg River (including the Action Area) from 1997 to 2014 were used to estimate a mean population of 2,106 RLP in the Pigg River (Roberts et al. 2016).

In the Anderson (2016) model, RLP potential habitat covers approximately 1,586 mi in VA, of which approximately 73 mi are in the Pigg River. The Action Area represents approximately 0.88% (0.6439 mi) of the total RLP potential habitat in the Pigg River and 0.04% of the total RLP potential habitat in VA. Assuming RLP are evenly distributed throughout the 73 mi of habitat in the Pigg River ($2,106 \text{ RLP} / 73 \text{ mi} = 28.8 \text{ RLP/mi}$), approximately 19 RLP would be present within the Action Area ($28.8 \text{ RLP/mi} \times 0.6439 \text{ mi} = 18.54 = 19 \text{ RLP}$).

The Action Area consists of riffle, run, and pool habitat in the Upper Pigg River bordered by a mix of forest and forested buffer between the river and agricultural lands and residential neighborhoods. The developed areas likely contribute to run-off (sediment) and contaminants, which enter the river and likely degrade RLP habitat.

EFFECTS OF THE ACTION

Direct effects are the direct or immediate effects of the project on the species, its habitat, or designated/proposed critical habitat. Indirect effects are defined as those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. Direct and indirect effects of the proposed action along with the effects of interrelated/interdependent activities are all considered together as the “effects of the action.”

The potential effects of the proposed action are described in Table 2. Those components of the proposed action determined to result in “no effect” or “not likely to adversely affect” are described in Table 2 and will not be further discussed in this Opinion. Multiple components of the project have been identified as having the potential to affect RLP (Table 2). These include:

- Installing and removing cofferdams and work bridge
- Removing existing instream piers, constructing new piers, placing riprap, and constructing new drainage features

Outside of the RLP TOYR (March 15-June 30) and immediately prior to bridge and pier demolition, the cofferdams and work bridge will be installed. RLP may be crushed during cofferdam and work bridge installation. RLP trapped within a cofferdam prior to dewatering will be removed and released approximately 50 ft downstream of the construction area. If RLP remain in the construction area after removal/relocation efforts we anticipate they will be entrained. At least 50% of river flow will be maintained at all times allowing RLP and other aquatic organisms to move through or away from the Action Area. Because we anticipate that the majority of RLP will leave or be removed from the area, we expect few individuals will be entrained. Instream structure placement and removal will result in temporary loss of river bottom habitat, change in water flow, and a sediment plume that will increase sediment/turbidity downstream, including the areas where relocated RLP are released. The temporary loss of river bottom habitat and change in flow will temporarily disrupt normal behavioral patterns (feeding, breeding, and sheltering). Increased sedimentation is anticipated to result in a loss of prey items and/or an ability of RLP to see the prey. Prey items may recolonize the areas within a few days to months (Brooks and Boulton 1991, Matthaei and Townsend 2000) after sedimentation and turbidity have returned to baseline levels. We expect RLP to move to areas with clearer water and substrate until structures are removed and turbidity returns to baseline levels, temporarily disrupting normal behavioral patterns (feeding, breeding, and sheltering).

Excavation and permanent fill including new drainage system construction, pier replacement (Pier 1) or removal (Pier 2), and riprap placement below OHW may cause upstream and downstream modification of the flow path, flow velocity, and river bottom configuration due to changes in river and bank profiles. RLP foraging habitat along the river edge and bottom will be permanently altered where riprap is placed. We expect that this small amount of permanent habitat loss will temporarily disrupt normal behavioral patterns (feeding, breeding, and sheltering) and that RLP will permanently move to nearby areas with natural substrate.

In summary, RLP may be entrained if they remain in the construction area. Additionally, a small amount of habitat is anticipated to be temporarily or permanently unavailable for use by RLP for the duration of the project. After removal of instream structures and a return to baseline turbidity conditions, we anticipate that RLP will resume use of this section of the Pigg River except for the areas of permanent habitat loss.

Table 2. Potential effects of proposed action. “No effect” (NE) rows are green, “not likely to adversely affect” (NLAA) rows are yellow, “likely to adversely affect” (LAA) rows are red.

Construction Activity	Environmental Impact or Threat	Stressor	Stressor Pathway	Exposure (Resource Affected)	Range of Response	Conservation Need Affected	Demographic Consequences	NE, NLAA, or LAA	Comments
Vehicle operation and foot traffic	Neutral	None	NA	NA	NA	NA	NA	NE	Will not introduce sediment or contaminants into Pigg River. No impacts to RLP are anticipated from this activity.
Clearing herbaceous vegetation, trees, shrubs for construction of improved approaches to the bridge, and space for cranes to safely move on the riverbank	Erosion, reduction in water quality	Turbidity, sedimentation, decreased visibility, decreased habitat quality	Denuding bank, disturbing soil, replacing vegetation with herbaceous cover	Habitat, individuals	NA	Breeding, feeding, sheltering	Distribution	NLAA	Erosion and sedimentation controls and restoration of bank vegetation will minimize sedimentation. Permanent loss of vegetation along the river is not expected. As a result, we do not anticipate this activity will generate a large amount of sediment. Therefore effects from this activity to RLP are expected to be insignificant.
Grubbing and grading, installing erosion control devices	Temporary loss of habitat, habitat degradation	Sedimentation	Stormwater erosion	NA	NA	NA	NA	NLAA	No instream work will occur March 15-June 30. We do not anticipate this activity will generate a large amount of sediment. Therefore effects from this activity to RLP are expected to be insignificant.
Installing and removing cofferdams and work bridge	Mechanical movement of large structures in water column and on river bottom, temporary loss of habitat, habitat and water quality degradation	Short-term displacement of water and substrate, sedimentation and altered water flow, impoundments	Instream earth and water disturbance may result in physical harm, increased sedimentation, altered flow, and short-term impoundment which could restrict up/downstream movement of species and habitat use	Habitat, population, individuals	Harm, kill	Breeding, feeding, sheltering	Numbers, reproduction, distribution	LAA	No instream work will occur from March 15-June 30. RLP may be crushed during cofferdam and work bridge installation. RLP trapped within cofferdams prior to dewatering will be removed and released approximately 50 ft downstream of the construction area. Relocation will be conducted by individuals with state permits. These structures will temporarily reduce habitat availability by making the river substrate and water flow unavailable in areas normally used for foraging, reproduction, and sheltering. We expect RLP to leave area to seek suitable habitat up or downstream, utilizing additional energy needed for foraging and reproduction. Installation and removal of structures will create a sediment plume that will increase sediment/turbidity downstream. Increased sedimentation is anticipated to result in loss of prey items and/or an ability of RLP to see prey, disrupting normal feeding patterns. We expect RLP to move to areas with

Construction Activity	Environmental Impact or Threat	Stressor	Stressor Pathway	Exposure (Resource Affected)	Range of Response	Conservation Need Affected	Demographic Consequences	NE, NLAA, or LAA	Comments
									suitable habitat until turbidity returns to baseline levels.
Removing existing piers, constructing new piers, placing riprap, and constructing new drainage features	Permanent loss of habitat	Sedimentation, altered flow	Permanent structures replace natural river bottom and bank, changes in flow and input	Habitat, population, individuals	Harm	Breeding, feeding, sheltering	Distribution	LAA	These activities occur behind cofferdams and impacts to RLP from placement and removal of cofferdams are discussed above. Excavation and permanent fill including piers, riprap, and embankment drainage placement below OHW will cause modification of flow path, flow velocity, and river bottom configuration after construction is complete due to changes in river and bank profile. While these changes are occurring, we expect RLP to move to areas with suitable natural substrate and flow, utilizing additional energy needed for foraging and reproduction. Areas that are temporarily impacted are expected to be inhabited by RLP post-project once the habitat returns to suitable conditions. Natural substrate will be permanently replaced in some areas after excavation, resulting in 850.5 ft ² of permanent RLP habitat loss. We expect RLP to be unable to return to these areas, permanently moving to nearby areas with natural substrate.
Installing new bridge deck, replacing abutments above OHW	Habitat degradation, reduction of prey population	Sedimentation	Riverbank earth disturbance may result in increased sedimentation, noise from replacement of bridge deck and abutments	NA	NA	NA	NA	NLAA	These activities occur above OHW. Containment structures will be used to keep material from entering the river. Erosion and sedimentation controls and restoration of graded areas will minimize sedimentation. Heavy equipment above and next to OHW generate vibration and noise that will temporarily disrupt normal behavioral patterns (feeding, breeding, and sheltering). We do not anticipate this activity will generate a continuous noise nor large amount of sediment. Therefore effects from this activity to RLP are expected to be insignificant.

Construction Activity	Environmental Impact or Threat	Stressor	Stressor Pathway	Exposure (Resource Affected)	Range of Response	Conservation Need Affected	Demographic Consequences	NE, NLAA, or LAA	Comments
Regrading and stabilization of riverbank, restoration of streambed	Temporary loss of habitat, water quality degradation, reduction of prey population	Minor sedimentation, loss of prey	Near, instream, earth disturbance may result in increased sedimentation, altered flow, noise	NA	NA	NA	NA	NLAA	This activity occurs behind cofferdams. Erosion and sedimentation controls and impacts to RLP from the placement and removal of cofferdams is discussed above. Effects to RLP from noise and work behind cofferdams are expected to be insignificant.
Replacing paved roadway approaches	Neutral	None	NA	NA	NA	NA	NA	NE	Will not introduce sediment or contaminants into Pigg River. No impacts to RLP are anticipated from this activity.

CUMULATIVE EFFECTS

Cumulative effects are those “effects of future State or private activities, not involving federal activities, that are reasonably certain to occur within the action area” considered in this Opinion (50 CFR 402.02). The existing agricultural lands and residential neighborhoods will continue to contribute run-off (sediment) and contaminants, which enter the river and likely degrade RLP habitat.

JEOPARDY ANALYSIS

Section 7(a)(2) of the ESA requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

Jeopardy Analysis Framework

“Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). The following analysis relies on 4 components: (1) Status of the Species, (2) Environmental Baseline, (3) Effects of the Action, and (4) Cumulative Effects. The jeopardy analysis in this Opinion emphasizes the rangewide survival and recovery needs of the listed species and the role of the Action Area in providing for those needs. It is within this context that we evaluate the significance of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Analysis for Jeopardy

Impacts to Individuals – The proposed action includes temporary instream structure placement and removal and permanent instream structure placement. As discussed in the Effects of the Action, potential effects of the action include effects to RLP present within the Action Area year-round for the duration of the project. Placement and removal of temporary and permanent instream structures will result in sedimentation. Sediment deposited on the river bottom will interfere with the ability of RLP to feed (Robertson et al. 2006). In response to sediment plumes, most RLP are anticipated to cease feeding and move to clearer water until sediment levels return to background levels. Individuals will expend more energy to seek out different foraging areas. A TOYR (March 15 - June 30) to protect RLP during their spawning season will be implemented, which will minimize the effects from sedimentation on breeding adults and eggs and young. Impacts to individual RLP are expected to include entrainment and temporary habitat loss (1,526 ft²) from installation and dewatering and removal of cofferdams and installation and removal of work bridges. RLP may be crushed/entrained during installation of cofferdams. Permanent habitat loss (850.5 ft²) from riprap placed around abutments and the drainage system will impact RLP foraging and spawning habitat. We expect increased sedimentation and turbidity from

project activities will make the Action Area unusable to RLP for foraging in the short-term, and that RLP will move to areas with less turbid waters. After a return to baseline turbidity conditions, we anticipate that RLP will resume use of the Action Area. In summary, these activities are anticipated to result in a loss of prey items and/or an ability to see the prey, permanently (through piers, riprap and drainage outlets) or temporarily (through sedimentation and turbidity) remove habitat, and injure or kill RLP due to cofferdam crushing or entrainment. As a result of this temporary and permanent habitat loss, we anticipate the majority of RLP will experience a decrease in individual fitness.

Impacts to Populations – As we have concluded that individual RLP are likely to experience impacts in their annual survival or reproductive rates, we need to assess the aggregated consequences of the anticipated impacts on the population to which these individuals belong. We expect that the population level impacts from death and habitat loss will be relatively minor because the proposed action affects individuals in 0.88% of the RLP potential habitat within the Pigg River, which is 0.04% of the RLP potential habitat in VA. RLP are expected to return to occupy the Action Area. Therefore, we conclude that the effects from the proposed action do not pose a significant risk to the RLP and will not result in permanent population declines.

Impacts to Species – As we have concluded that the Pigg River population of RLP is likely to experience temporary reductions in fitness, there will be no harmful effects (i.e., there will be no reduction in RND) on the species as a whole.

CONCLUSION

We considered the current overall improving rangewide status of the RLP and the improving condition of the species within the Action Area (environmental baseline). We then assessed the effects of the proposed action and the potential for cumulative effects in the Action Area on individuals, populations, and the species as a whole. As stated in the Jeopardy Analysis, we do not anticipate any reductions in the overall RND of the RLP. It is the Service's Opinion that FHWA's provision of funding to VDOT for the Route 718 Bridge Replacement, as proposed, is not likely to jeopardize the continued existence of the RLP.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined in section 3 of the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by FHWA so that they become binding conditions of any grant or permit issued to VDOT, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA: (1) fails to assume and implement the terms and conditions or (2) fails to require VDOT to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, FHWA or VDOT must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE ANTICIPATED

Numeric Estimate of Anticipated Incidental Take/Use of Surrogate for Monitoring Take

The Service has used available data to quantify and numerically express anticipated incidental take of RLP. This numerical estimate provides a clear limit on the incidental take anticipated and authorized in this Opinion. However, based on the difficulties associated with monitoring take in terms of affected individuals, the Service also provides an additional, alternative means of monitoring take of RLP. This approach is most protective of RLP in that reinitiation is triggered if the incidental take from the project exceeds the number of RLP specified below or exceeds, in any amount or manner, the surrogates specified below.

50 CFR 402.14(i)(1)(i) states that surrogates may be used to express the amount or extent of anticipated take provided the Opinion or incidental take statement: (1) describes the causal link between the surrogate and take of the listed species; (2) describes why it is not practical to express the amount of anticipated take or to monitor take-related impacts in terms of individuals of the listed species; and (3) sets a clear standard for determining when the amount or extent of the taking has been exceeded.

In situations where some data exist that may be used to calculate a numerical estimate of take for a species but there are challenges associated with measuring take in terms of individuals, the Service has used surrogates as an additional means of monitoring take. In those instances, project effects outside of a specifically defined amount of affected surrogate serves as a trigger indicating that the numerical take estimate may have been exceeded and reinitiation is required.

Numeric Estimate of Anticipated Incidental Take

The numerical estimate of incidental take of RLP was calculated based on an estimate of 19 RLP within the Action Area. All 19 RLP within the Action Area are expected to be directly or indirectly affected by the proposed action. Within the Pigg River 340,000 ft² of river bottom are expected to be impacted (average width of river at OHW multiplied by the total of the construction and river length; 100 ft x (120 ft + 3,280 ft) = 340,000 ft²). Of this, 12,000 ft² will be temporarily or permanently impacted (width of project footprint at OHW multiplied by

construction length, Figure 3; $100 \text{ ft} \times 120 \text{ ft} = 12,000 \text{ ft}^2$). This represents 3.5% of the Action Area, where 1 RLP is expected to be found ($3.5\% \text{ of } 19 \text{ RLP} = 0.665 = 1 \text{ RLP}$). The remaining $328,000 \text{ ft}^2$ of river bottom will be indirectly impacted (Action Area minus area of temporary and permanent impacts; $340,000 \text{ ft}^2 - 12,000 \text{ ft}^2 = 328,000 \text{ ft}^2$). This represents the remaining 96.5% of the Action Area, where 18 RLP are expected to be found ($96.5\% \text{ of } 19 \text{ RLP} = 18.335 = 18 \text{ RLP}$). The anticipated take is described in Table 3.

Surrogate for Monitoring Take

It is not practical to monitor take-related impacts in terms of individual RLP for the following reasons: the RLP has a small body size making it difficult to locate, which makes encountering dead or injured individuals unlikely; scavengers may consume the carcass or the carcass may be swept downstream; losses may be masked by annual fluctuations in numbers; take may occur offsite (e.g., a RLP may die outside of the Action Area) and would not be detected; and some of the anticipated take including non-lethal injury of individual RLP is not directly observable.

This incidental take statement uses the $12,000 \text{ ft}^2$ of river bottom disturbance as a surrogate to express the extent of authorized take for the RLP because it is not practical to monitor take-related impacts in terms of individuals of the species. The total area of river bottom disturbance ($12,000 \text{ ft}^2$) is the area impacted by temporary and permanent impacts from fill (Table 1) and construction below OHW. The $12,000 \text{ ft}^2$ of river bottom disturbance is the amount of river bottom between OHW on both banks, bounded to the north (upstream) by the drainage construction easement boundary at OHW and to the south (downstream) by the construction easement boundary at OHW (Figure 3 and Appendix A), this includes 850.5 ft^2 of permanent fill.

In this situation $12,000 \text{ ft}^2$ of river bottom disturbance will serve as a surrogate for incidental take of RLP because river bottom disturbance will directly and indirectly cause the anticipated incidental take within the bounds of the identified square footage of river bottom disturbance. The anticipated take is described in Table 3.

Table 3. Amount and type of anticipated incidental take.

Species	Amount of Take Anticipated (surrogate)	Amount of Take Anticipated (individuals)	Life Stage when Take is Anticipated	Type of Take	Take is Anticipated as a Result of
RLP	$12,000 \text{ ft}^2$ of river bottom disturbance	1	All	Harm, Kill	Crushing or entrainment due to cofferdams or work bridge construction
		18		Harm	Reduced quantity and quality of foraging, spawning, and sheltering habitat due to sedimentation, fill, and altered flow

Therefore, because $12,000 \text{ ft}^2$ of river bottom disturbance, which includes 850.5 ft^2 of permanent fill, can be readily identified and monitored, this surrogate serves as a practical means for detecting when the amount or extent of take may have been exceeded.

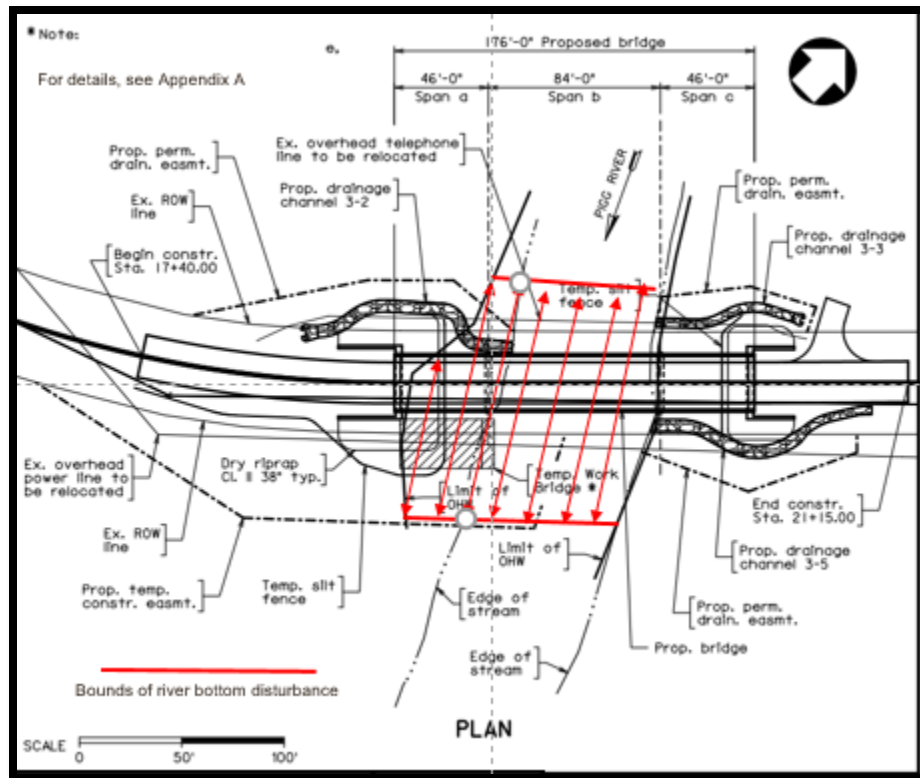


Figure 3. Project footprint and area of river bottom disturbance.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of RLP:

- Provide information to individuals involved in project construction on how to avoid and minimize effects to RLP.
- Conduct construction in a manner that minimizes disturbance to RLP.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. Prior to initiation of on-site work, notify all prospective employees, operators, and contractors about the presence and biology of the RLP, special provisions necessary to protect the RLP, activities that may affect the RLP, and ways to avoid and minimize these effects. This information can be obtained by reading RLP-related information in

this Opinion or a fact sheet containing this information can be created and provided by the FHWA or the applicant.

2. Minimize clearing/grubbing of trees and woody vegetation.
3. Fill any sandbags used in cofferdams with clean sand and no other materials. All sandbags must be new with no prior use and must be removed at the time of cofferdam removal.
4. Build cofferdams to a height, strength, and configuration to resist no less than normal peak daily flows.
5. Minimize instream (Pigg River) foot traffic during construction.
6. Vehicles or construction equipment may not enter the Pigg River, except within cofferdams.
7. Inspect all equipment for leaks immediately prior to instream or cofferdam work. Repair any leaks and clean construction vehicles thoroughly to remove any residual dirt, mud, debris, grease, motor oil, hydraulic fluid, coolant, or other hazardous substances from construction vehicles. Inspections, repairs, cleaning, and/or servicing will be conducted either before the vehicle, equipment, or machinery is transported into the field or at the work site within the staging area. All wash-water runoff and/or harmful materials will be appropriately controlled to prevent entry into the waterbody, including the riparian zone.

MONITORING AND REPORTING REQUIREMENTS

1. Notify the Service regarding the projected and actual start dates, progress, and completion of the project and verify that the 12,000 ft² of river bottom disturbance, which includes 850.5 ft² of permanent fill, was not exceeded and all conservation measures were followed. Provide a report containing this information by December 31 of each year until the year after construction is complete to the Virginia Field Office at Troy_Andersen@fws.gov.
2. Any high water event that disturbs the construction site, including failure or overtopping of cofferdams, must be reported to the Service at the contact phone number/email address below within 24 hours.
3. Any spills of motor oil, hydraulic fluid, coolant, or similar fluids, not contained before entry into the Action Area, must be reported to the Service at the contact number/email provided below and National Response Center (800-424-8802) immediately.
4. Care must be taken in handling any dead specimens of proposed or listed species to preserve biological material in the best possible state. In conjunction with the

preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. The reporting of dead specimens is required to enable the Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. Upon locating a dead specimen, notify the Service's Virginia Law Enforcement Office at 804-771-2883 and the Service's Field Office at the phone number provided below or at 804-693-6694.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

- Plant native trees and shrubs in all cleared areas to improve RLP habitat quality.
- Avoid using paving sealants and herbicides on new bridge approaches and maintenance, or if necessary use only herbicides and sealants appropriate for use near wetlands and waterbodies. Application should occur only during periods with low probability of rainfall.
- Conduct or fund research/monitoring of benthic habitat conditions before/during/after construction of this and other projects.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this Opinion or our shared responsibilities under the ESA, please contact Troy Andersen of this office at (804) 824-2428 or via email at Troy_Andersen@fws.gov.

Sincerely,

Cindy Schulz
Field Supervisor
Virginia Ecological Services

Enclosures

cc: Corps, Norfolk, VA (Attn: Robert Berg)
Corps, Norfolk, VA (Attn: Lee Fuerst)
VDGIF, Henrico, VA (Attn: Ernie Aschenbach)
VDOT, Richmond, VA (Attn: Amy Golden)
VDOT, Salem, VA (Attn: Paul Johnson)

LITERATURE CITED

- Anderson, G.B. 2016. Development and application of a multiscale model of habitat suitability for Roanoke logperch. Final Report to U.S. Fish and Wildlife Service, Virginia Field Office, Gloucester, VA.
- Brooks, S.S. and A.J. Boulton. 1991. Recolonization dynamics of benthic macroinvertebrates after artificial and natural disturbances in an Australian temporary stream. *Australian Journal of Marine and Freshwater Research* 42:295-308.
- Matthaei, C.D. and C.R. Townsend. 2000. Long-term effects of local disturbance history on mobile stream invertebrates. *Oecologia* 125:119-126.
- Roberts, J.H., P.L. Angermeier, and E.M. Hallerman. 2016. Extensive dispersal of Roanoke logperch (*Percina rex*) inferred from genetic marker data. *Ecology of Freshwater Fish* 25:1-16.
- Robertson, M.J., D.A. Scruton, R.S. Gregory, and K.D. Clarke. 2006. Effect of suspended sediment on freshwater fish and fish habitat. Canadian Technical Report of Fisheries and Aquatic Sciences 2644.
- Rosenberger, A.E. and P.L. Angermeier. 2002. Roanoke logperch (*Percina rex*) population structure and habitat use. Virginia Cooperative Fish and Wildlife Research Unit, Blacksburg, VA. Final report to Virginia Department of Game and Inland Fisheries, Richmond, VA.
- Rosenberger, A. and P.L. Angermeier. 2003. Ontogenetic shifts in habitat use by the endangered Roanoke logperch (*Percina rex*). *Freshwater Biology* 48: 1563-1577.
- U.S. Fish and Wildlife Service. 1992. Roanoke logperch (*Percina rex*) Recovery plan. Virginia Field Office, Gloucester, VA.
- U.S. Fish and Wildlife Service. 2007. Roanoke logperch (*Percina rex*) 5-year review: summary and evaluation. Virginia Field Office, Gloucester, VA.
- Virginia Department of Environmental Quality. 1992. Virginia erosion and sediment control handbook. Third edition. Available from: <http://www.deq.virginia.gov/Programs/Water/StormwaterManagement/Publications/ESCHandbook.aspx>
- Virginia Department of Game and Inland Fisheries Environmental Services Section. 2018. Fish relocation best practices. Available from: <https://www.dgif.virginia.gov/wp-content/uploads/Fish-Relocation-Best-Practices-20180313.pdf>

Virginia Department of Transportation. 2016. Road and bridge specifications. Available from:
http://www.virginiadot.org/business/resources/const/VDOT_2016_RB_Specs.pdf

Virginia Department of Transportation. 2019. Final section 7 project description for Route 718
Bridge Replacement over Pigg River, UPC #55471.

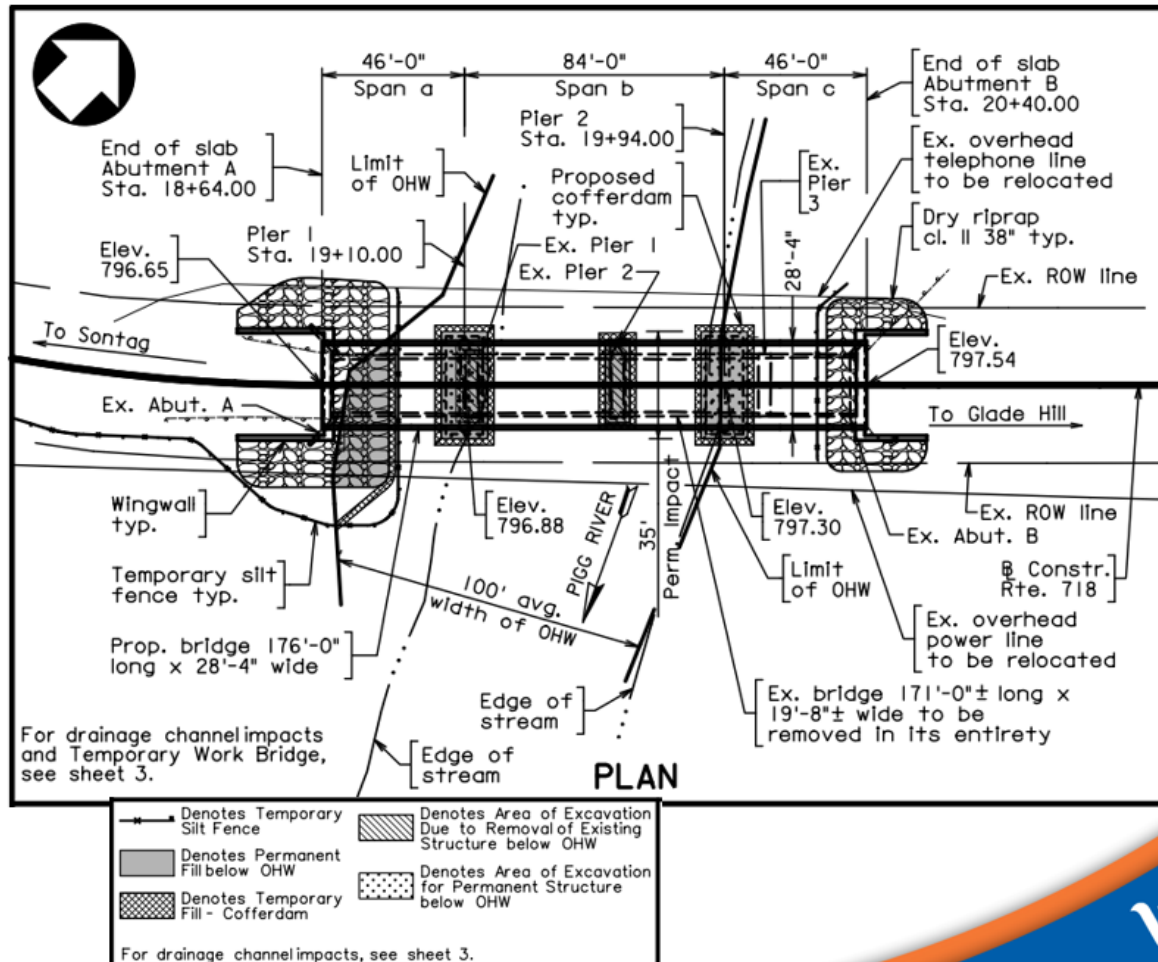
Virginia Fish and Wildlife Information Service. 2019. Species Information [Internet]. Richmond,
VA [cited May 30, 2019]. Available from: <http://vafwis.org/fwis>

CONSULTATION HISTORY

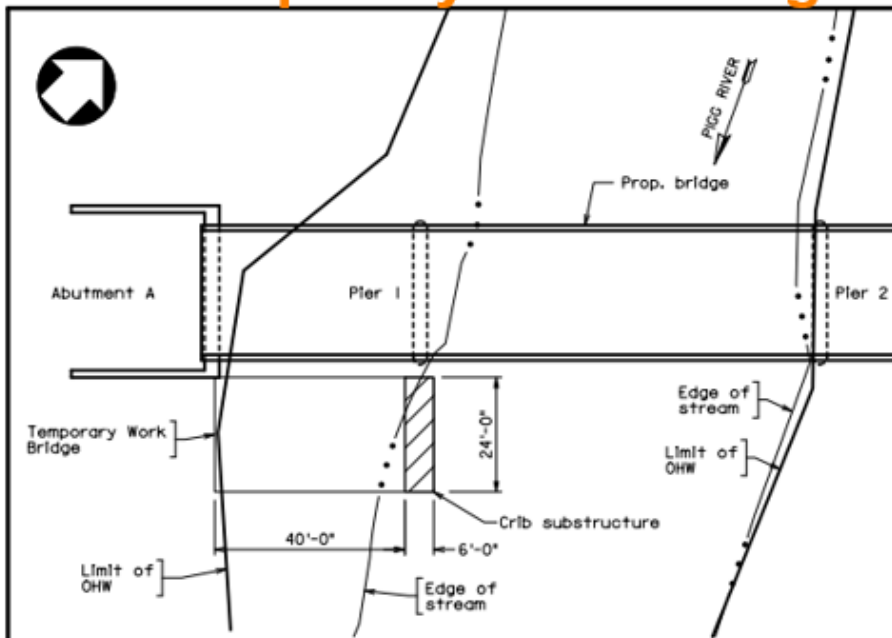
- 02-07-2019 The Service received the FHWA's 2/06/2019 letter containing complete project description and request to initiate formal consultation.
- 03-12-2019 VDOT presented project to IACM and provided Service with additional project details.
- 03-15-2019 VDOT emailed additional plans and photos to Service.
- 03-19-2019 The Service sent email to the FHWA, Corps, and VDOT with signed letter confirming formal consultation.
- 04-12-2019 The Service requested and received additional information from VDOT on abutments and riprap.
- 06-21-2019 VDOT contacted the Service to provide accurate data regarding project impacts.

Appendix A.
Plans for Route 718 bridge replacement over Pigg River, Franklin Co., VA

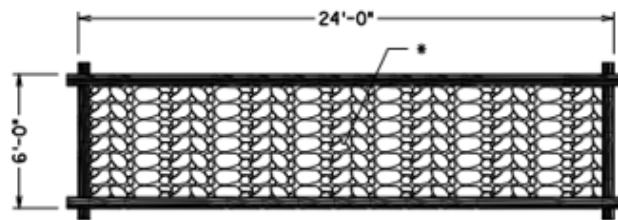
Plan View



Temporary Work Bridge



PLAN VIEW - TEMPORARY WORK BRIDGE
(Suggested Temporary Work Bridge)



PLAN VIEW - CRIB SUBSTRUCTURE

(Suggested Rock Filled Timber Crib Substructure)

* Rock fill for timber crib shall consist of non-erodible material.

NOT TO SCALE

TEMPORARY WORK BRIDGE REQUIREMENTS:

- Minimum low chord = Elev. 781.50
- Stone is to be placed under Crib to level if needed.
- No equipment or vehicles will be allowed below the OHW limits except within cofferdams.

 Denotes temporary fill - Work Bridge

VDOT
Permit Application Sketch
For Proposed Highway Bridge
Replacement Stream Crossing
Project 0718-033-334, B653
Route 718 Over Pigg River
Franklin County
Sheet 4 of 6
Salem District
Datum NAVD 88 & NAD 83 Date: 6-5-17

Drainage Improvements

